IS 5297 (1977): Perchloroethylene (tetrachloroethylene), Technical [PCD 9: Organic Chemicals Alcohols and Allied Products and Dye Intermediates]

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IS : 5297 - 1977

Indian Standard

SPECIFICATION FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

(First Revision)

UDC 661·723·64

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Rs 8 50

March 1979

AMENDMENT NO. 3 MAY 2002
TO
IS 5297 : 1977 SPECIFICATION FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

(First Revision)

[*Page* 4, *Table* 1, *Sl No.* (vi) (*see also Amendment No.* 2)] — Insert the following after Sl No. (vi):

(1)	(2)	(3)	(4)
vii)	Colour, *Max*	25	IS 8768 : 1988
viii)	Moisture, ppm, *Max*	200	IS 2362 : 1993

(PCD 9)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 NOVEMBER 1986

TO

IS: 5297-1977 SPECIFICATION FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

(First Revision)

[*Page 4, Table 1, Sl No. (iv), col 3*] - Substitute '0.020' *for* '0.005 to 0.020'.

(PCDC 9)

Reprography Unit, ISI, New Delhi, India

Indian Standard

SPECIFICATION FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

(First Revision)

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AMENDMENT NO. 2 JANUARY 1998
TO
IS 5297 : 1977 SPECIFICATION FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

(First Revision)

[*Page* 4, *Table* 1, *Sl No.* (iii), *col* 2 *and* 3] — Substitute the following for the existing:

(2)	(3)
Distillation range at 760 mm Hg	The difference between the temperatures (running points) at which 2 and 97 percent of the volume taken have been collected shall not exceed 2.5°C. The range shall include 121 2°C.

[*Page* 4, *Table* 1, *Sl No.* (v)] — Insert a new requirement as follows:

(1)	(2)	(3)	(4)
vi)	Resistance to corrosion	To pass the test	A-7

(*Page* 7, *clause* A-3.2, *line* 2) — Substitute 'Suitable heating media' *for* 'water-bath'.

(*Page* 7, *clause* A-3.3, *line* 4) — Substitute 'g' *for* 'mg'.

[*Page* 9, *clause* A-4.1.5(b), *line* 1] — Substitute 'sheet' *for* 'shelf'.

[*Page* 11, *clause* A-4.3.2(a) *and* (b)] — Substitute the following for the existing matter:

'a) For every 10 mm above 760 mmHg, subtract 0.47°C from the observed temperatures of the boiling range to get the specified temperature range at 760 mmHg.

b) For every 10 mm below 760 mmHg, add 0.47°C to the observed temperatures of the boiling range to get the specified temperature range at 760 mmHg.'

(*Page* 12, *clause* A-5.0, *line* 4) — Insert 'with' between 'layer matches' and 'that of the'.

(*Page* 14, *clause* A-5.3, *line* 2) — Delete 'accurately weighed'.

(*Page* 14, *clause* A-6.3.1) — Insert a new clause A-7 after A-6.3.1:

A-7 TEST FOR RESISTANCE TO CORROSION

A-7.1 Apparatus

A-7.1.1 *Microscope*

Any suitable microscope which can magnify 20 times.

A-7.1.2 *Carbon Steel Strips*

50 mm × 10 mm of any other suitable size which is polished over smooth emery paper, cleaned and dried. The strips shall be free from any rust spot.

A-7.1.3 *Glass Bottle* — 500 ml.

A-7.2 Procedure

Take 200 ml of the material in a clean, dry glass bottle provided with a lid. Immerse the rust free polished carbon steel strips in the material and maintain in the same for 24 hours and observe under a suitable microscope (× 20) for any rust spots that might have developed.

A-7.3 The material shall be taken to have passed the test if no rust spots are observed on the steel strips.

(PCD 9)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 12 December 1977, after the draft finalized by the Organic Chemicals (Miscellaneous) Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was first issued in 1969. As a result of review of the quality of product available and that specified in Indian as well as various overseas standards, the Sectional Committee decided to revise it. In the present revision the requirements for distillation range and alkalinity have been modified. The methods of test for the determination of alkalinity and free chlorine have also been reviewed and modified suitably.

0.3 The use of perchloroethylene, also known as tetrachloroethylene, as a solvent, especially in drycleaning, is widely prevalent. To some extent, it is also used as an extractant, and as a metal degreasing and metal drying agent particularly for light metals like aluminium, magnesium, zinc and their alloys. This standard is expected to guide the manufacturers of tetrachloroethylene in meeting the requirements of drycleaning and other industries. This standard covers only the technical grade of perchloroethylene as is used in drycleaning, metal degreasing, metal drying, solvent extraction, etc. The material is generally stabilized. This standard does not cover the pharmaceutical grade or the food solvent grade.

0.4 Perchloroethylene is not corrosive or dangerously reactive, but is toxic when inhaled, brought in prolonged contact with skin or mucous membrane or ingested by mouth. However, with proper precautions it can be handled safely. Exposures to high concentrations cause irritation, lachrymation and burning of the eyes, and irritation of nose and throat. Proper ventilation is, therefore, necessary while handling this liquid. Prolonged inhalation may cause vomiting, nausea, drowsiness, attitude of irresponsibility and may even resemble alcoholic intoxication. It may produce dermatitis, particularly after repeated or prolonged contact with the skin, preceded by a reddening and burning, and more rarely, blistering on the

skin. When ingested, it irritates gastro intestinal tract, the effect of which is less severe than other chlorinated hydrocarbons.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for perchloroethylene (tetrachloroethylene), technical.

2. REQUIREMENTS

2.1 The material shall be a clear, almost colourless, mobile liquid, free from matter in suspension and sediment. It shall be free from extraneous matter except substances added as stabilizers up to 0·02 percent (*m/m*).

2.2 The material shall also comply with the requirements given in Table 1 when tested according to the methods prescribed in Appendix A. Reference to the relevant clauses of the appendix is given in col 4 of the table.

TABLE 1 REQUIREMENTS FOR PERCHLOROETHYLENE, TECHNICAL

Sl No	Characteristic	Requirement	Method of Test (Ref to Cl No in Appendix A)
(1)	(2)	(3)	(4)
i)	Relative density* at 27/27°C	1·610 to 1 620†	A-2
ii)	Residue on evaporation, percent by mass, *Max*	0 01	A-3
iii)	Distillation yield between 119 to 122°C, the temperature being corrected for 760 mmHg pressure, percent by volume, *Min*	95	A-4
iv)	Alkalinity (as Na_2CO_3), percent by mass, *Max*	0 005 to 0 020	A-5
v)	Free chlorine	To pass the test	A-6

*Relative density is the term adopted for specific gravity with water as reference substance by the International Organization for Standardization (ISO).

†The correction factors for relative density for each degree celsius rise and fall in temperature are −0 001 2 and +0·001 2 respectively within the temperature range of 25 to 35°C.

*Rules for rounding off numerical values (*revised*).

3. PRECAUTIONS IN HANDLING

3.1 Avoid contact with eyes, prolonged or repeated contact with skin and prolonged breathing of the vapours. Do not take the material internally.

4. PACKING AND MARKING

4.1 Packing — The material shall be packed securely in closed mild steel or galvanized steel drums or as agreed to between the purchaser and the supplier. They shall be protected from light and stored in a cool and well-ventilated place.

4.2 Marking — Each container shall be securely closed and shall bear legibly and indelibly the following information:

a) Name of the material;

b) Name of the manufacturer and his recognized trade-mark, if any;

c) Lot or batch number in code or otherwise; and

d) Gross, net and tare mass.

4.2.1 The containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 Representative samples of the material shall be drawn and their conformity to the standard determined as prescribed in Appendix B.

APPENDIX A

(*Clause* 2.2)

METHODS OF TEST FOR PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

A-1. QUALITY OF REAGENTS

A-1.1 Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis

A-2. DETERMINATION OF RELATIVE DENSITY

A-2.0 Outline of the Method — In this method masses of equal volumes of the material and water at the same temperature are compared using relative density bottle.

A-2.1 Apparatus

A-2.1.1 *Relative Density Bottle* — 25 ml capacity.

A-2.1.2 *Water-Bath* — maintained at 27·0 ± 0·2°C.

A-2.1.3 *Thermometer* — any convenient thermometer of a suitable range with 0 1 or 0 2 deg sub-divisions.

A-2.2 Procedure — Clean and dry the relative density bottle, weigh and then fill with recently boiled and cooled water at 27°C. Fill to over flowing by holding the relative density bottle on its side in such a manner as to prevent entrapment of air bubbles. Insert the stopper and immerse in the water-bath. Keep the entire bulb completely covered with water and hold at that temperature for 30 minutes. Carefully remove any water which has exuded from the capillary opening. Remove from the bath, wipe completely dry, cool and weigh. Calculate the mass of water. Again clean and dry the relative density bottle. Using the material under test, proceed exactly as in the case of water and weigh the bottle with the material.

A-2.3 Calculation

$$\text{Relative density at } 27/27^\circ\text{C} = \frac{A - B}{C - B}$$

where

A = mass in g of the relative density bottle filled with the material,

B = mass in g of the clean and dry relative density bottle, and

C = mass in g of the relative density bottle filled with water.

*Specification for water for general laboratory use (*second revision*).

A-3. DETERMINATION OF RESIDUE ON EVAPORATION

A-3.1 Apparatus

A-3.1.1 *Basin* — flat-bottomed, made of nickel, platinum or silica and of about 75 mm diameter.

A-3.1.2 *Oven* — with thermostatic control capable of maintaining temperature within ± 2 deg.

A-3.2 Procedure — Evaporate 100 ml of the material to dryness in a tared basin on a water-bath in a fume cupboard. Dry the residue for 30 minutes in an oven at a temperature of 100 ± 2°C. Cool in a desiccator and weigh.

A-3.3 Calculation

$$\text{Residue on evaporation, percent by mass} = \frac{M}{d}$$

where

M = mass in mg of the residue, and

d = relative density of the material.

A-4. DETERMINATION OF DISTILLATION YIELD

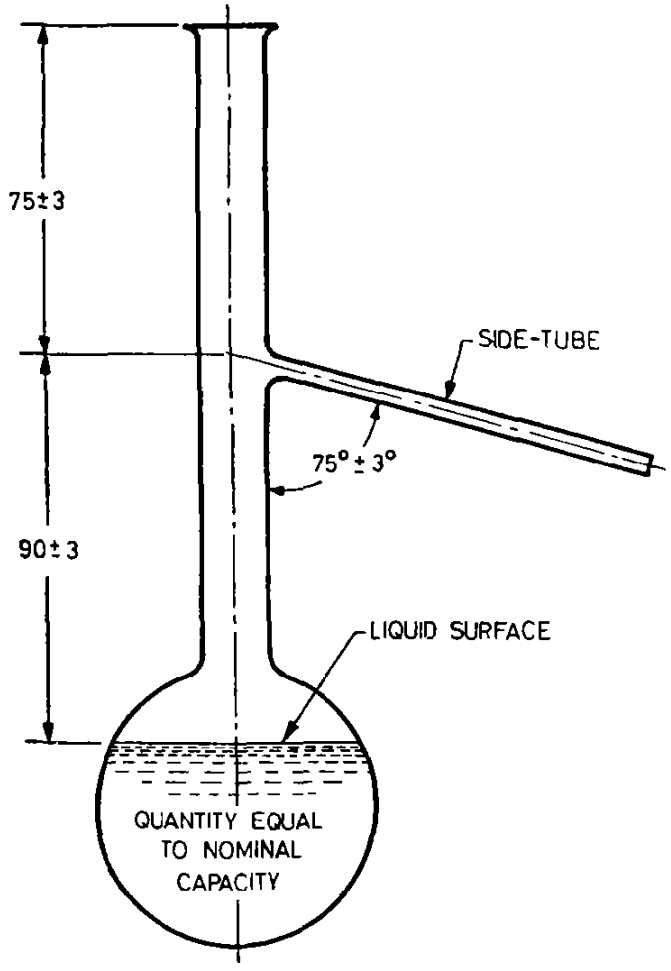
A-4.1 Apparatus

A-4.1.1 *Distillation Flask* — of the shape and dimensions shown in Fig. 1.

A-4.1.2 *Thermometer* — of partial immersion type so fitted in the flask that the bottom of the capillary is level with the lower edge of the side-tube joint and the immersion mark is level with the top of the cork.

A-4.1.2.1 The recommended dimensions, tolerances and graduations of the thermometer are as follows:

Range	98 to 152°C
Graduation	0·2°C
Longer lines at each	1°C
Fully figured at each	10°C
Fractional figuring at each	2 and 10°C
Immersion	100 mm
Overall length, *Max*	385 mm
Length of main scale, *Min*	190 mm
Bulb length	15 to 20 mm
Stem diameter	5·5 to 8·0 mm
Distance from bottom of bulb to bottom of main scale, *Min*	125 mm
Distance from bottom of bulb to top of contraction chamber, *Max*	35 mm
Maximum error	± 0·4°C



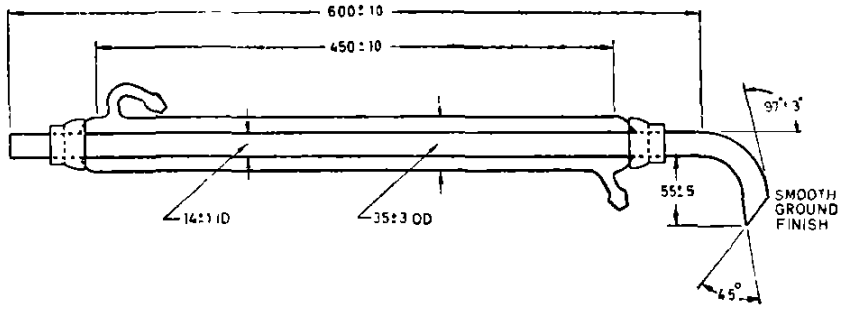
All dimensions in millimetres.

FIG. 1 DISTILLATION FLASK

A-4.1.2.2 The thermometer shall bear a certificate from the National Physical Laboratory, New Delhi or any other organization authorized by the Government of India to issue such a certificate.

A-4.1.3 *Liebig Condenser* — made of Type 1 glass (graded according to IS : 2303-1963*) with a wall thickness of 1·0 to 1·5 mm and conforming to the shape and dimensions given in Fig. 2.

*Method of grading glass for alkalinity.



All dimensions in millimetres.

FIG. 2 LIEBIG CONDENSER

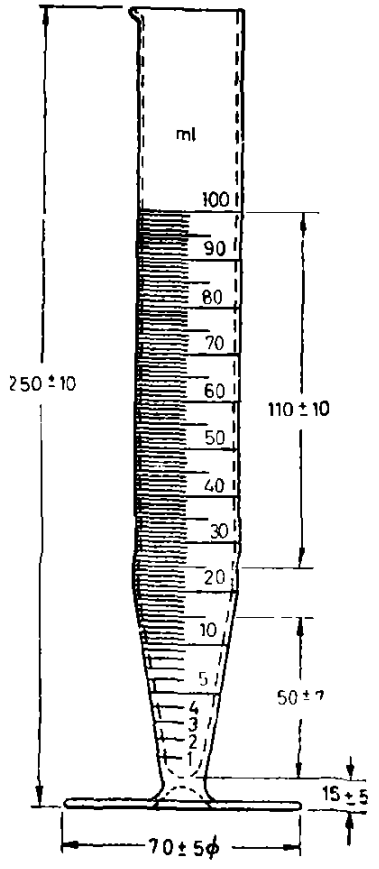
A-4.1.4 *Receiver* — 100-ml capacity, with dimensions and graduations as shown in Fig. 3.

A-4.1.5 *Rectangular Draught Screen* — rectangular in cross section, made of 0·8 mm thick metal sheet with the dimensions shown in Fig. 4 and open at the top and bottom. It shall comply with the following requirements:

a) In each of the two narrower sides of the draught screen there shall be two circular holes, each of 25 mm diameter, and in each of the four sides of the draught screen there shall be three holes with their centres 25 mm above the base of the draught screen. These holes shall occupy the position shown in Fig. 4. The diameter of each of the holes centrally situated in the longer sides shall be 25 mm and of the remaining ten holes shall be 12·5 mm. At the middle of each of the wider sides a vertical slot with the dimensions shown in Fig. 4 shall be cut downwards from the top of the screen. A removable shutter conforming to the dimensions shown in Fig. 5 shall be provided for closing the vertical slot not in use.

b) A shelf of hard asbestos board, 6 mm in thickness and having a central hole 110 mm in diameter, shall be supported horizontally in the screen and shall fit closely to the sides of the screen to ensure that hot gases from the source of heat do not come in contact with the sides or neck of the flask. The supports for this asbestos shelf may conveniently consist of triangular pieces of metal sheet firmly fixed to the screen at its four corners.

c) In one of the narrower sides of the screen a door shall be provided having dimensions and position as shown in Fig. 4. In each of the narrower sides of the screen a mica window shall be placed centrally with the bottom of the window on a level with the top of the asbestos shelf. The dimensions and position of the windows are shown in Fig. 4.

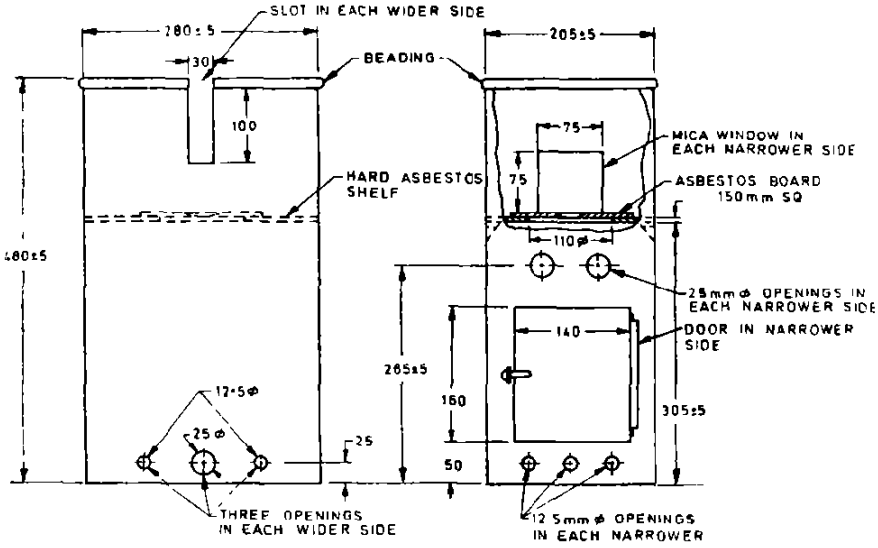


All dimensions in millimetres.

FIG. 3 RECEIVER

d) An asbestos board 150 × 150 × 6 mm in size having a central hole 50 mm in diameter shall be so placed on the asbestos shelf that the two holes are approximately concentric and the distillation flask when in position completely closes the hole of the asbestos board.

A-4.1.6 *Electric Heater, Gas Burner or Other Flame Type Heater* — any type of heater or burner that enables the distillation to be carried out as described in **A-4.2.**



All dimensions in millimetres.

FIG. 4 RECTANGULAR DRAUGHT SCREEN

A-4.2 Procedure — Assemble the apparatus as shown in Fig. 6. Measure 100 ml of the material at laboratory temperature in the receiver and transfer it to the distillation flask, the material being allowed to drain for 15 seconds into the flask. Add a fragment of pumice stone or other suitable inert material to prevent bumping. Place the flask, thermometer and receiver in position. Heat at a uniform rate so that the first drop of distillate falls from the end of the condenser in 12 to 15 minutes. Further regulate the heat so that the distillate is collected at the rate of 3 to 4 ml per minute. Read the volume of distillate in the receiver when the thermometer indicates each of the corrected specified distillation temperatures.

NOTE — It is desirable to run a preliminary distillation so that the heat source may be regulated to supply heat to distil the liquid at the specified rate. The flask should be cleaned after preliminary distillation

A-4.3 Correction of Thermometer Reading — The corrections given in **A-4.3.1** and **A-4.3.2** shall be applied before starting distillation.

A-4.3.1 *Error of Scale* — In all thermometer readings, make the corrections as indicated on the certificate of the instrument.

A-4.3.2 *Correction for Barometric Pressure* — If the barometric pressure prevailing during the determination is 760 mmHg, no correction need be applied to the specified temperatures and the thermometer scale as corrected

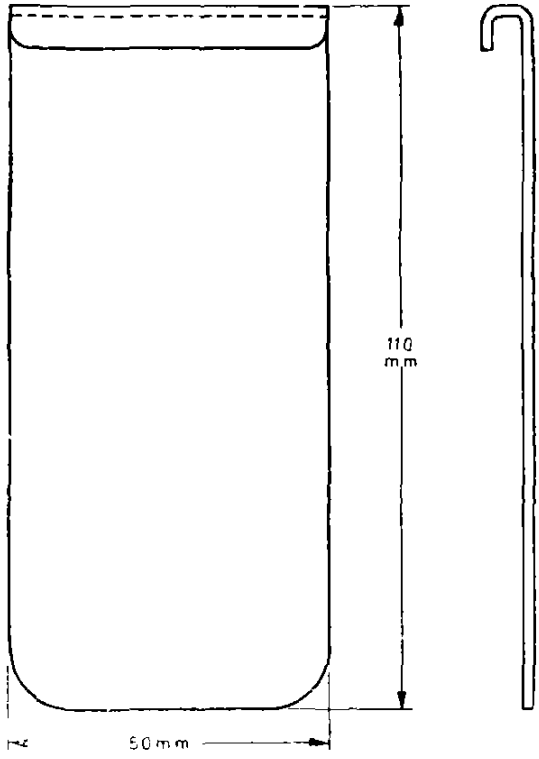


FIG. 5 REMOVABLE SHUTTER

under **A-4.3.1** may be used as such. If, however, the prevailing barometric pressure deviates from 760 mmHg, the specified temperatures shall also be corrected as follows:

a) For every 10 mm above 760 mmHg, subtract 0·47 deg from the specified temperature; and

b) For every 10 mm below 760 mmHg, add 0·47 deg to the specified temperature.

NOTE — These corrections are valid only for pressures above 700 mmHg.

A-5. TEST FOR ALKALINITY

A-5.0 Outline of the Method — A known mass of the material is shaken with neutralized water and then titrated with standard hydrochloric acid using bromophenol blue as indicator. The end point is noted when the colour of the aqueous layer matches that of the neutralized water. From the amount of standard hydrochloric acid used the alkalinity is calculated as sodium carbonate.

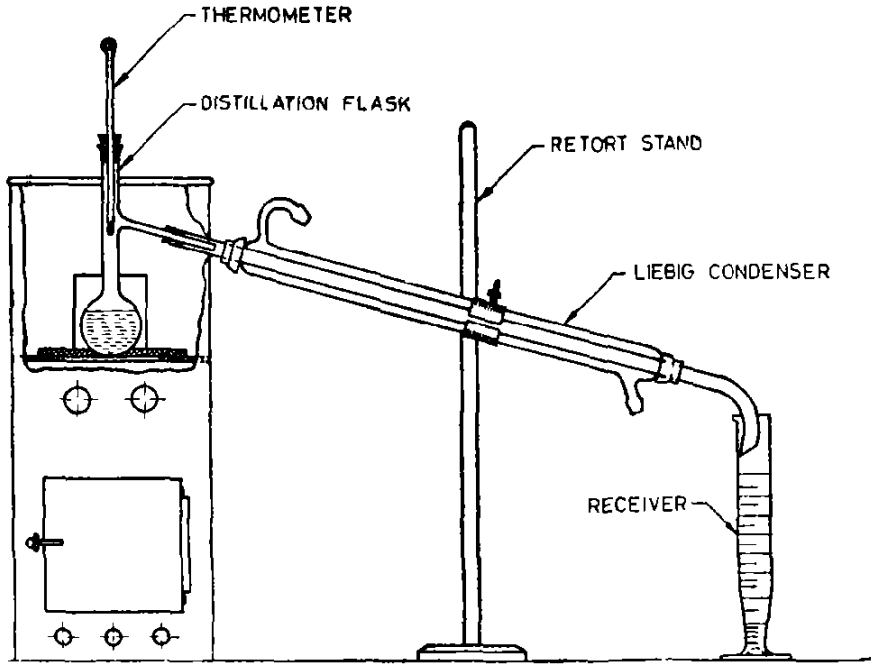


FIG 6 ASSEMBLY OF APPARATUS

A-5.1 Apparatus

A-5.1.1 *Glass-Stoppered Flasks* — of 250-ml capacity, two.

A-5.2 Reagents

A-5.2.1 *Sodium Hydroxide Solution* — approximately 0·1 N.

A-5.2.2 *Rectified Spirit — See* IS : 323-1959*.

A-5.2.3 *Standard Hydrochloric Acid* — 0·1 N.

A-5.2.4 *Bromophenol Blue Indicator* — Dissolve 0 2 g of bromophenol blue in 3 ml of sodium hydroxide solution and dilute to 100 ml with rectified spirit (95 percent).

A-5.2.5 *Neutralized Distilled Water* — Measure 100 ml of the distilled water into one of the flasks. Add 1 0 ml of the bromophenol blue indicator and, if necessary, neutralize by dropwise addition of the sodium hydroxide solution or standard hydrochloric acid until a neutral (green) tint is obtained.

*Specification for rectified spirit (*revised*).

A-5.3 Procedure — Transfer 50 ml of the neutralized distilled water to the other flask, add about 100 ml of the material, accurately weighed and shake well. Titrate the mixed liquids with standard hydrochloric acid, gently swirling the flask and adding the acid a few drops at a time. When the end point is almost reached add standard hydrochloric acid one drop at a time and shake the liquid after each addition. Note the end point when the colour of the aqueous layer, after allowing the liquid to separate, matches that of the neutralized distilled water.

A-5.4 Calculation

$$\text{Alkalinity (as } Na_2CO_3\text{), percent by mass} = \frac{0.053\ V\ N}{d}$$

where

V = volume in ml of standard hydrochloric acid used,

N = normality of standard hydrochloric acid, and

d = relative density of the material.

A-6. TEST FOR FREE CHLORINE

A-6.0 Outline of the Method — The material is shaken with 3, 3'-dimethylnaphthidine solution and the colour developed, if any, is noted.

A-6.1 Apparatus

A-6.1.1 *Graduated Measuring Cylinder* — 50 ml, glass stoppered (*see* IS : 878-1956*).

A-6.2 Reagent

A-6.2.1 *3, 3'-Dimethylnaphthidine Solution* — Dissolve 0.01 g of finely ground 3, 3'-dimethylnaphthidine in 5 ml of glacial acetic acid and dilute rapidly with water to 200 ml. Store the solution in the dark.

A-6.3 Procedure — To 50 ml of the material contained in the graduated measuring cylinder, add 5 ml of the 3, 3'-dimethylnaphthidine solution and shake the cylinder for 30 seconds.

NOTE — The test shall be carried out in the dark and colour development checked immediately

A-6.3.1 The material shall be considered as having no free chlorine if no pink colour is developed within one minute.

*Specification for graduated measuring cylinders.

APPENDIX B

(*Clause* 5.1)

SAMPLING OF PERCHLOROETHYLENE (TETRACHLOROETHYLENE), TECHNICAL

B-1. GENERAL REQUIREMENTS OF SAMPLING

B-1.1 The sampling instrument shall be clean and dry.

B-1.2 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination (*see also* **3.1**).

B-1.3 To draw a representative sample, the contents of each container selected for sampling shall be mixed thoroughly by shaking or stirring or both by suitable means, or by rolling.

B-1.4 The samples shall be placed in suitable, clean, dry and airtight metal, or dark or amber glass containers on which the material has no action.

B-1.5 The sample containers shall be of such a size that they are almost completely filled by the sample.

B-1.6 Each sample container shall be sealed airtight after filling and marked with full details of sampling, the date of sampling and the month and year of manufacture of the material.

B-1.7 Samples shall be stored in the dark.

B-2. SAMPLING INSTRUMENT

B-2.1 The following forms of sampling instrument may be used:

a) Sampling bottle or can, for taking samples from tanks or drums, and

b) Sampling tube, for taking samples from bottle or small containers.

B-2.1.1 *Sampling Bottle or Can* — consists of a weighed glass or metal container with removable stopper or top to which is attached a light chain (*see* Fig. 7). The bottle or the can is fastened to a suitable pole. For taking sample, the bottle or the can is lowered into the tank to the required depth and the stopper is then removed by means of the chain.

B-2.1.2 *Sampling Tube* — made of metal or thick glass, is 20 to 40 mm in diameter and 400 to 800 mm in length (*see* Fig. 8). The upper and lower ends are conical and reach 5 to 10 mm diameter at the narrow ends. Handling is facilitated by two rings at the upper end.

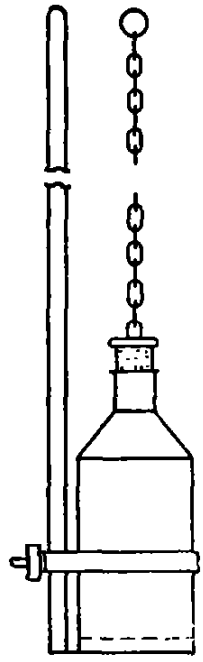


FIG. 7 SAMPLING BOTTLE OR CAN

B-2.1.2.1 For small containers the size of the sampling tube may be altered suitably

B-3. SCALE OF SAMPLING

B-3.1 For Tanks and Drums — Each tank or drum shall be sampled separately.

B-3.2 For Bottle and Small Containers — Each lot (*see* **B-3.2.1**) shall be sampled separately

B-3.2.1 *Lot* — In any consignment, all the containers of the same size and drawn from a single batch of manufacture shall constitute a lot. If a consignment is known to consist of different batches of manufacture or different sizes of containers, the containers belonging to the same batch and size shall be grouped together and each such group shall constitute a separate lot.

B-3.2.1.1 For ascertaining the conformity of the material in a lot, samples shall be tested for each lot separately.

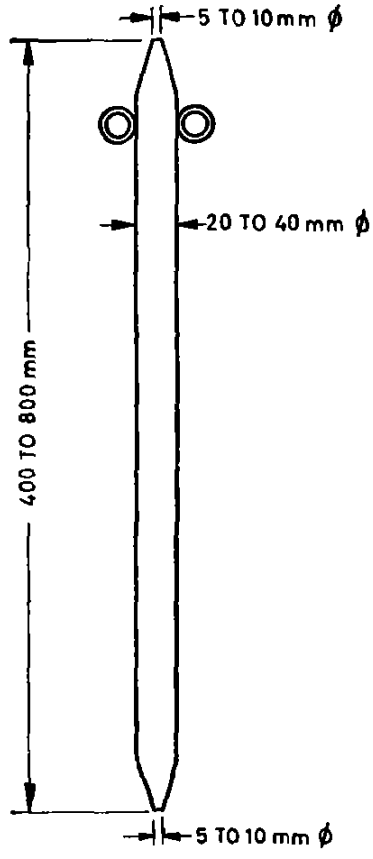


FIG. 8 SAMPLING TUBE

B-3.2.2 The number of containers (n) to be selected from a lot shall depend on the size of the lot (N) and shall be in accordance with Table 2.

B-3.2.3 The containers shall be selected at random from the lot. In order to ensure the randomness of selection, a random number table shall be used. For guidance and use of random number tables, IS : 4905-1968*

*Methods for random sampling.

may be referred. In the absence of a random number table, the following procedure may be adopted:

'Starting from any container, count them as 1, 2, 3,....., up to r and so on where r is an integral part of N/n, N being the lot size and n the sample size respectively. Every rth container thus counted shall be withdrawn so as to give the required sample size.'

TABLE 2 NUMBER OF CONTAINERS TO BE SELECTED FROM LOTS OF DIFFERENT SIZES FOR SAMPLING

(*Clause* B-3.2 2)

LOT SIZE N	NO. OF CONTAINERS TO BE SELECTED n
(1)	(2)
Up to 15	3
16 to 40	4
41 to 65	5
66 to 110	7
111 and above	10

B-4. PREPARATION OF TEST SAMPLES

B-4.1 Tanks and Drums — As far as possible, samples from a tank or drum should be drawn during the operation of filling. In that case, equal amounts of the material shall be collected at regular intervals so as to get a total amount of about 1 500 ml. Where it is not possible to take a sample during filling, the material shall be drawn from different positions and depths with the sampling bottle or can after thoroughly agitating the material so as to ensure a fair amount of homogeneity. The total amount of the material collected shall be thoroughly mixed and divided into three equal portions, one for the purchaser, another for the supplier and the third for the referee.

B-4.2 Bottles and Small Containers — From each of the bottles or containers selected according to **B-3.2.3**, a small representative portion of the material shall be drawn with the help of the sampling tube. Equal quantities of the material so drawn from the various containers shall be thoroughly mixed to form a test sample of about 1 500 ml. This shall be divided into three equal parts, one for the purchaser, another for the supplier and the third for the referee.

B-4.3 All the test samples shall be transferred to separate sample containers and sealed and labelled with full identification particulars. The referee test sample bearing the seal of both the purchaser, and the supplier shall be kept at a place agreed to between the two and shall be used in case of a dispute.

B-5. NUMBER OF TESTS

B-5.1 Tests for the determination of all the requirements given in this specification shall be performed on the test sample obtained as in **B-4.1** and **B-4.2.**

B-6. CRITERIA FOR CONFORMITY

B-6.1 The lot shall be declared as conforming to this specification if all the test results satisfy the requirements prescribed in **2.1** and Table 1.

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245-1970 Trichloroethylene, technical (*second revision*)
501-1976 Oxalic acid, technical and analytical reagent (*second revision*)
716-1970 Pentachlorophenol (*first revision*)
717-1969 Carbon disulphide, technical (*first revision*)
718-1977 Carbon tetrachloride (*second revision*)
869-1976 Ethylene dichloride (*second revision*)
880-1956 Tartaric acid
3321-1973 Formaldehyde solution (*first revision*)
4105-1967 Styrene (venyl benzene)
4306-1973 Hexamethylenetetramine (hexamine) (*second revision*)
4566-1968 Methylene chloride (dichloromethane), technical
5149-1977 Maleic anhydride, technical (*first revision*)
5158-1977 Phthalic anhydride, technical (*first revision*)
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6393-1971 α-Phenylacetamide
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7918-1975 Diethylene glycol
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